Issue 13

January 2018

Utah Valley Amateur Radio Club

The UVARC Shack

A new hope in a new year

Merry Christmas and Happy New Year to all of you from all of us! We hope your holiday season was as cheerful and fun-filled as it was for the rest of the club.

We've had a terrific December starting with our Christmas Potluck, including the jolly ol' elf himself. As a club, we purchased a boatload of presents and, like *ninjas*, doorbell-ditched a family in need. And we ended the month with Santa once again, willing to get on the radio and entertain our little ones.

And now it's time to start looking forward to a new year with new hopes and a new resolve. And while many of us have decided on resolutions toward health, financial, educational, and family goals, we'd like to encourage you, our fellow club members, to add one more resolution to your long list.

We invite you to join with us in resolving to be kinder, gentler, and more forgiving to your fellow hams. Be quick to overlook their faults and be slow to correct them. Let courtesy guide your ham radio habits; think through what you're going to say before laying it out over the air; give people the benefit of the doubt, and assume the best, not the worst, about their intentions.

We're all amateurs, and we're all learning the ways of the airwaves, and sometimes a little patience on your part can reap big dividends down the road. And if somebody's been kind and forgiving to you, pay it forward. Volunteer your help to lift another new ham who needs a signal check or help understanding which antenna to use and how.

In this issue of the *UVARC Shack*

A proposed resolution for the new year. Plus, a special pictorial issue about the Christmas Potluck.

A visit to the shack of KR5LYS to learn how she got her start in ham radio. In *Brass Tacks* we take a look at a foundational technology. In *DIY* we explore what an NVIS antenna is, and how to build one. *Dear Annette* answers questions about mumbling and which antenna to get. *ARRL News* is actually from the FCC, and not really news at all.

Please send your ideas, stories, updates, photos, questions, gripes, and breaking news to ***uvarcshack@gmail.com***

Inside this issue

Way to Be	2
My Shack	8
Brass Tacks	9
Dear Annette	13
Hot Tips	14
DIY	15
Upcoming Contests	19

Other points of interest

- Eddy-kit 14
- ARRL News 14
- For Your Insight 18
- Questions of the Month 18
- Lynx 18
- Calendar, Nets 19
- Ham radio courses 19
- Who we are 20

Way to Be

Spotlight on our members

UVARC Christmas Potluck

Way to Be

continued

Way to Be

continued

Way to Be

continued

Way to Be

continued

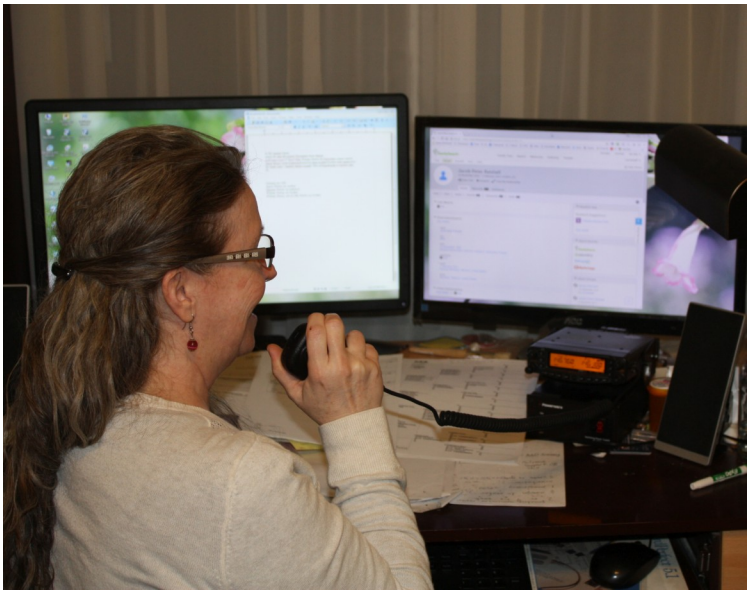
Way to Be

continued

My Shack

Highlighting the shack (ham equipment and room) of a member, to give others an idea of the possibilities that might work for them

Lisa Ratzlaff, KR5LYS



Many years ago I attended the Trek with our stake, in which we donned period clothing and retraced the steps of two fateful handcart companies of Mormon pioneers through a stretch of the Mormon Trail in Wyoming. It was such a thrilling experience to have half my family, plus my father, hike with us for the journey, that I looked forward to a repeat of that occasion, if it ever came again.

Years later that opportunity arrived, but this time, sadly, most of the spots that previously required my contribution were filled. Then I heard that the radio communication team on the Trek organization needed licensed ham radio operators, and I didn't know what that meant, but I was ready to do anything it took to get involved. So, I studied and got my ticket, became acquainted with radio on the Wyoming Trek, and here I am today.

Since then, I've discovered that most of the guys on the air were so dang serious, that I've made it my personal goal to make fun of them. I mean, make ham radio fun for them. =] I often check into the weekly UVARC Ladies' Net, the 76'ers Net, and our Stake Net, but I really enjoy being Net Control for the club's Family History Net every Saturday at 8 pm.

My *huge* assortment of amateur radio gear includes a Yaesu FT-60R, Baofeng UV-5RA, Yaesu FT-2900R mobile (in my Nissan Xterra), and Yaesu FT-8800R mobile (on my desk) powered by a Powerwerx SS-30DV power supply. Just outside and above my office I have a "Pockrus" J-pole antenna mounted 27 feet up, fed through LMR-400 coax and an Alpha Delta TT3G350UHP surge protector to my office. On my Xterra I have a Comet SSB-25NMO on a Tram 1235 NMO mag-mount.

I hope to hear you on the air!

— 73, KR5LYS

Brass Tacks

An in-depth look at a radio-related topic

How vacuum tubes work

You might find the topic of vacuum tubes a little antiquated, if not irrelevant, to most ham radio discussions we have today, and understandably so. Tubes have, for the most part, been made obsolete by smaller, less expensive, cooler, more efficient, and more reliable components in today's electronic equipment. Yet, due to curiosity, nostalgia, or the sheer desire to understand the original or older technology, more and more hams are still asking about it.

They've played a vital role in amateur radio history, after all. Furthermore, the fact that a few questions regarding vacuum tubes remain in the Amateur Extra exam pool only adds to the mystery. So, for those who really want to know, I've decided to try and help you understand the technology behind how these components work. But I caution you: this material can get a little deep and dry, so I'll try and make it as engaging as I could. And to make it a tiny bit interesting, I've decided to take a slightly historical approach, rather than a purely technical one, to explain some of the secrets behind these little, glowing bottles.

A bit of history

In 1880 Thomas Edison arguably discovered that a voltage placed across two pieces of metal, one much hotter than the other, will cause charged particles (later called *electrons*) to jump from the hotter metal to the cooler metal if the cooler metal has a positive voltage compared with that of the hotter metal, placed across them. He thought this was a pretty neat experiment, yet saw no real practical benefit from it, but patented his findings anyway, as was his way with just about every one of his experimental conclusions. Edison soon discovered that the hot metals oxidized at the temperatures that successfully "boiled off" the electrons this way, and so had to maintain the environment in a glass-sealed vacuum.

In 1904 English physicist and experimenter John Ambrose Fleming demonstrated that the *Edison Effect*, as it was later called, could be used to convert AC to DC, since it allowed current flow in one direction. And by convention (no thanks to Benjamin Franklin), that direction is opposite the flow of electrons. Then, following another convention established by Michael Faraday a few years previous, Fleming called the conductor that emits the electrons the *cathode* (meaning *the way downward*), and the other the *anode* (*opposite the way downward*.) And because the whole device presents two electrodes, he named it a *diode*.

The diode was revolutionary, because resorting to mechanical or other unreliable means of converting AC to DC was no longer necessary. Nor was it required to employ huge batteries to provide the needed DC current.

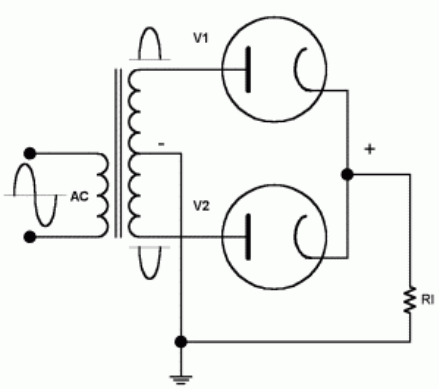
Rectification

If you examine the schematic diagram on the next page, you can see how two diode tubes can be used to convert AC to DC, using a transformer with a center tap. Remembering that current can only flow inside the tube from the anode to the cathode (because current flow is opposite electron flow), each time the AC current from the transformer runs positive, it flows through the top tube, but not the bottom one. Then, when the AC current becomes negative, it flows

Brass Tacks

continued

through the bottom tube, but not the top. The resulting current will therefore only be positive, and we call this *rectification*, meaning to *correct* or *make positive*. The output voltage is then smoothed out by *filtering*, to make it almost truly DC. This very configuration was used in numerous power supplies for decades, as the primary method of obtaining DC power from an AC source.



Full-wave diode rectifier

Early problems

One problem encountered with earlier tubes is that they required 250 to 400 volts across the anode and cathode to even start the electron migration, and make the tube function. Furthermore, to provide an even more efficient electron source, the heated filament, acting as the cathode, was coiled into a helix to present more surface area, which required increased power to heat it to the necessary high temperature. So, tubes generated quite a lot of heat, requiring good ventilation.

And because of the elevated filament temperature, even a little Oxygen or Nitrogen inside the presumed vacuum can shorten tube life dramatically. As a result, tube manufacturers installed *getters*, pasted deposits (the characteristic shiny metallic blotch seen inside the tops of the glass) or metal halos of reactive material that absorb air molecules when heated. You can sometimes tell a broken tube by the getter having turned a powdery white.

Amplification

In 1906 American inventor Lee de Forest experimented with modifying the flow of electrons flying from the cathode to the anode, which caused the anode voltage to vary accordingly. To confirm this effect, he introduced a third electrode to the diode tube, attached to an internal grid of wires placed between the cathode and anode. He then observed that the voltage at the anode changed proportionally with the changes he introduced at this third electrode. And because the anode voltage was large compared with the small voltage on this control grid, the output at the anode was simply a larger voltage version of the grid voltage, regardless what waveform he presented at the grid, and the electronic tube *amplifier* was born.

This new device, called a *triode*, helped propel the electronic industry into a new age of radio and audio engineering. Within just a few years, the vacuum tube triode could be found nearly everywhere there was an electronics need. But soon it was discovered that the amplification came at a price, in the form of an unmistakable hum in the amplified audio.

It turned out that the AC frequency powering the filament acting as the cathode, was transferred through the filament to the output. So, a modification allowed indirect heating of the cathode by isolating the filament circuit from the cathode, which in turn required more energy and more time for the tube to warm up, but de-coupled the AC hum from the audio signal.

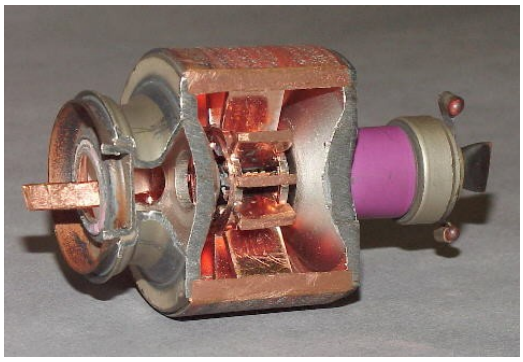
Brass Tacks

continued

As more anomalies with the triode became apparent, a solution by way of another grid was introduced in the *tetrode*, which greatly increased gain and helped screen, or isolate, the input and output signals, and so was named the *screen grid*. But the screen grid added an undesirable effect of its own, and a third grid, the *suppressor grid*, was introduced in the *pentode* to remove the effect. After that, many new tubes were developed, but just about all subsequent vacuum tubes were designed from one of these types, especially the pentode.

Specialized tubes also began to spring up for many applications. One such tube that found its way just about everywhere was the CRT, or *cathode-ray tube*, so-called because inside the tube the cathode emitted an electron "ray" toward the anode, which was a phosphorescent screen. Among many other appliances, CRTs were used in television sets, computer monitors, and oscilloscopes. Another specialized tube still in use today is the X-ray tube. Yet another is the magnetron, used for radar. A similar one is used in today's microwave ovens.

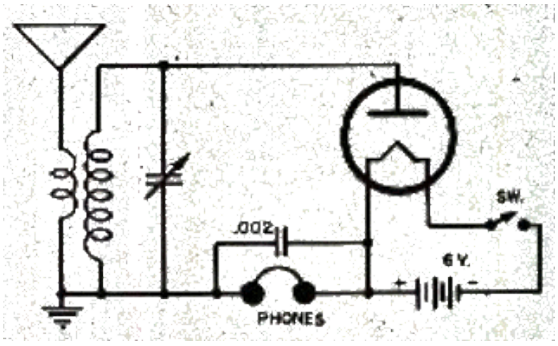
Television cathode-ray tube



Radar magnetron

Detection / demodulation

As mentioned, vacuum tubes became integral to the design of amplifiers in a variety of circuits that needed them. But for amateur radio they were also key components in *oscillators*, *mixers*, and *detectors*. For example, the schematic diagram below shows a rather simplified AM radio signal detector (*demodulator*) made from a single tube diode. The radio signal is introduced to the circuit by a *monopole* antenna (dipole with one pole in the air and the other in the ground), with the two separated by an inductor coil in an air-core transformer. The variable capacitor and inductor *resonate* at a radio frequency (RF) selected by the capacitor, creating a *tuned circuit* at that frequency, meaning all the radio signals except the ones at that frequency will be filtered out.



Simple diode AM detector circuit

Brass Tacks

continued

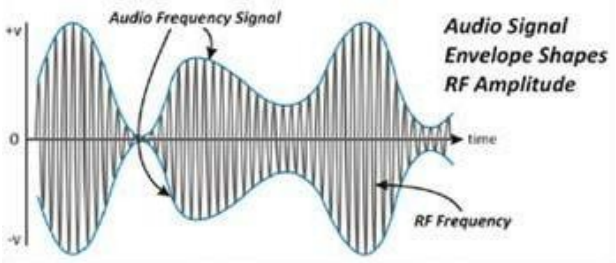


Figure 1— incoming RF (AM) signal

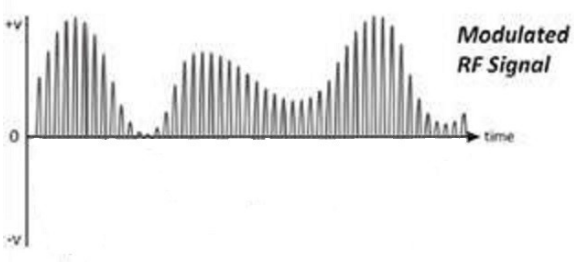


Figure 2 — incoming signal rectified

The resulting signal across the variable capacitor will appear like the AM waveform in Figure 1. Once the switch in the circuit is turned on, the battery will heat the tube filament, which will start sending electrons to the plate. In this diode configuration, only the positive signals of the RF waveform will go through the tube from the plate to the filament, resulting in the rectified waveform in Figure 2, which will appear across the headphones.

The purpose of the fixed capacitor is to filter out the RF portion of the signal, so that every time after the RF signal reaches a peak, instead of falling back to zero, it falls at a rate of RC, which is much slower. By the time this signal has fallen even a tiny amount, the next rise in the RF signal brings it back to the peak again. What you hear in the headphones, then, is close to the envelope of the RF waveform, which is the original unmodulated audio of Figure 3.

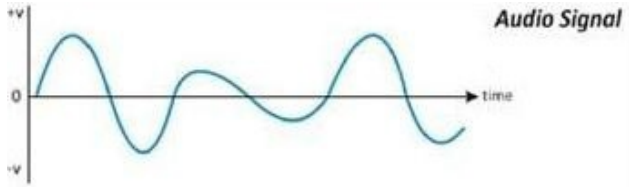


Figure 3— output audio signal

The vacuum tube today

Before you completely scrap the vacuum tube for being obsolete or old-school, you might be surprised to learn that tubes can still be found in many modern audio (think guitar) as well as amateur radio amplifiers. Some specialized devices, like radar, X-ray machines, high-powered broadcast radio transmitters, and microwave ovens, still rely on vacuum tubes to perform their magic.

As transistor and other solid-state amplification solutions improve, the vacuum tube might one day become a thing of the past. Still, tubes tend to be more immune to electrostatic discharge, power surges, and electromagnetic pulse, than solid-state electronics, so their future remains to be seen. But when I see them in action, they still give me a warm glow.

— Noji Ratzlaff, KNØJI (kn0ji@arrl.net)

Dear Annette

What's on your mind? Serious, humorous, technical, and thoughtful answers to your deepest, (mostly) ham-related questions.

Dear Annette:

I've been told that I need to get a better antenna than the stock variety that came with my HT. So, what kind of antenna should I get for it?

Loomis in American Fork

Dear Loomis:

You've been told correctly about getting an HT antenna that performs better than your rubber duck. Deciding which is best for you depends on where and how you plan to use your little radio. If you want to use it exclusively inside your home, you should consider installing a Pockrus J-pole on your roof outside, with a coaxial feedline and pigtail. If you plan to use it in your car, you might want to install a mobile antenna, like a Nagoya UT-108, at first. If you want to use your radio out and about, like hiking, picnicking, or just walking around town, get a whip, such as the SignalStick flexible antenna.

Dear Annette:

I have a slight speech problem because of some past mouth surgeries, and people have told me a few times that I mumble when I'm talking on the repeater. Do you have any suggestions for what I could do to improve my speech?

Pondering in Draper

Dear Pondering:

Not knowing exactly how you sound, and not being a doctor, it might be difficult for me to give you a precise prescription on how to remedy your speech issue. But if you don't mind my generalizing, I can suggest two things I've seen help a few: 1) speak slowly and 2) keep your syllabic volume (loudness) consistent. For example, to say the word *individual*, I might practice saying all five syllables with the same loudness, instead of allowing the last couple of syllables to soften.

Dear Annette:

Does ham radio contribute to obesity?

Slim in Las Vegas

Dear Slim:

Not sure whether any funded studies indicate one way or the other, but my guess is that it probably doesn't contribute any more than does chess or Facebook. So, let's try something truly scientific. First, get your amateur radio license, if you don't already have one. Next, measure your weight and BMI. In two years report back and let me know how your weight and BMI ended up. The *Friday Lunch Bunch* and the *Meet & Eat* will be sad to lunch without you for the next 24 months, but I'm certain it'll be well-worth your sacrifice in the interest of science.

Dear Annette:

Do hams have a special day they celebrate?

Party Hardy in Santaquin

Dear Hardy:

On one hand, you might mean *WARD*, or *World Amateur Radio Day*, which is April 18. But you could also be referring to the day the 10-meter band opens, and if it does, please be sure to let me know!

Got a question for Dear Annette*? Send your email to* ***uvarcshack@gmail.com*** *and include your town.*

Hot Tips

Good info for the new ham, and old stuff to refresh your memory

Eddy-kit

Radio etiquette reminders

- When traveling outside Utah, make sure you know, or at least ***make an attempt to find out, whether it's alright for you to use a particular repeater***. Just because it's there doesn't give you automatic rights on it. Believe it or not, some clubs, repeater groups, or owners do not welcome newcomers on their turf. Listen for awhile before jumping on an unknown repeater, then ask whether it's alright for a newcomer to use it.
- No matter what the situation (casual conversation, local net, actual emergency), if an operator says "stand by", you and all other operators listening have two options: either ***don't say anything*** (remain silent) or say, ***KI7XXX, standing by*** if you need to ID. If you continue talking, you might be interfering with an emergency situation or incident, and the requesting station won't hear you anyway.
- When you're operating your radio in a noisy environment (kids at home, helping in a parade, at an airport, natural disaster, etc.), keep in mind that ***you do not need to hear yourself talking***. If you shout into the mic so loudly that you can hear yourself, you might just distort the audio so badly that your friend couldn't understand you. Takes a little practice, but train yourself to speak normally and naturally, even when it's noisy around you.

ARRL News

The latest from the mother ship

Unlicensed amateur operators may use your call sign

This is actually not from the ARRL, and it's not really news, but this column is probably the most appropriate place to mention one item that's been on our minds recently. A question came up regarding whether an unlicensed person can announce the ID of the licensee in control of the amateur radio station, or whether the licensee needed to take the mic and utter the ID. The question sparked some debate and disagreement among hams, both locally and online, so we decided to settle the matter by taking it directly to the gubmit.

After calling the FCC and speaking with several of them, Rebecca "Becky" Williams (717-338-2768) returned our calls with the definitive answer. She said that an ***unlicensed operator is permitted to transmit the call sign*** of the licensee overseeing the amateur operation. She also listed the following applicable FCC regulations (01-08-2018) in support of their decision:

- **97.3(a)(5)** : A ***station*** is a piece of equipment, not a person
- **97.119(a)** : Each ***station*** must transmit its own call sign (equipment, not always a person)
- **97.3(a)(13)** : The ***control operator must be licensed*** (therefore, an unlicensed operator cannot be the control operator, and when the licensee turns control of the station to an unlicensed operator, the licensee remains the control operator)
- **97.115(b)(1)** : An ***unlicensed operator is permitted to transmit from a station***, supervised by a control operator

For your information, the rules governing Field Day, special event, and GOTA stations are covered in **97.119(d)**

DIY

Worthwhile projects you can build on your own

40/80-meter NVIS Antenna

Did you install a highly recommended HF antenna, purchase a nice HF rig, fire it up, only to find people you know in your town, your county, or even in Utah couldn't hear you? To make matters worse, you can barely hear them too. What's going on? Well, before you request a refund on your radio and scrap your antenna, maybe a change in just your antenna can make a difference.

During World War II the military often depended on short-ranged (a few dozen miles) AM radio communication, which is subject to several major limitations, including excessive noise, inability to penetrate foliage, huge power requirements, and sheer equipment weight. Often they needed communication for a much wider area, and SSB (single sideband) over HF (high frequency) allowed them to really get their signal out using less power. More often than not, however, the resulting signals overshot their targets, and could be heard thousands of miles away, but if they only needed to reach their command centers located 150 to 300 miles away, they were in trouble.

The military figured that, if they could get much of their signal to shoot straight up into our ionospheric dome, it would get reflected back down, but over a slightly wider area. Because the incidence (angle of transmission) would be nearly vertical, and the actual radio waves used for the communication were *skywave* (reflected from the atmosphere), it became known as *near vertical incidence skywave*, or NVIS, nicknamed *cloud-warmer*. This method of transmission resulted in communicating with ground stations 100 to 400 miles away, ***on 40 meters during the day and 80 meters at night***. Let's explore how to construct just such an antenna.

An NVIS antenna is nothing more than a Yagi antenna aimed straight up, and consists of a pair of dipole driven elements and a reflector element. So, essentially we're talking three wires, coax, appropriate connector, and support. Let's start with a shopping list:

110 feet of 18 AWG speaker wire

1 x 50-foot RG-8X coax with PL-259 ends

2 x 10-foot 1" Schedule 80 PVC

1 x 6" of 1-1/4" PVC tubing

1 x 10-inch section of 4" PVC

4 x #6 3/4" beveled machine screws

1 x 16 AWG ring lug

4 x metal camping stakes

1 x SO-239 bulkhead connector

3 x 4-foot sections of rebar

6 x 1" PVC slip couplings

1 x 4-foot 1/2" Schedule 40 PVC

Zip ties, paracord

4 x #6 nuts and lock washers

4 x plastic camping stakes

Speaker wire

PVC slip coupling

SO-239 bulkheads

DIY, continued

40/80-meter NVIS Antenna

This particular 40/80-meter NVIS design is attributed mostly to Steve Brumagin, KI4VGA.

Center divider

In the 1-1/4" PVC tubing drill a 3/8" hole in the center, and four 1/8" holes, one at one inch from the end, and another at two inches from the end, on each side of the 3/8" hole, with all five holes in a straight line. Cut a 35-foot length of the speaker wire and unzip it to separate the two conductors. Slip one of the two wires through the inside of the tubing, out through one of the 1/8" holes that's two inches from the end, then back into the hole that's one inch from the end, then out the large hole. Repeat this with the other wire on the other side. Solder and/or crimp the lug on one of the two wires protruding from the large hole.

Insert the SO-239 bulkhead into the large hole to measure, then drill out the four small bulkhead screw holes in the PVC tubing. Solder the wire without the lug to the center pin of the SO-239 bulkhead. Attach the SO-239 bulkhead to the PVC tubing, connecting the lug to one of the inside bulkhead screws. Cut four two-inch sections of the 1/2" PVC and drill two opposing 1/4" holes about 1/2" from each end of all four tubes. Loop the end of each wire through two end holes of one of the two-inch tubes, and zip-tie the wires so that the entire length of each wire is about 33 feet 6 inches.

Separators

Cut five 5" sections of the 1/2" PVC, and drill two opposing 1/4" holes about 1/2" from each end of all five tubes. Cut a 76-foot length of the speaker wire and unzip it to separate the two conductors. String each wire through one pair of holes in each five-inch tube. Loop the end of each wire through two end holes of one of the two-inch tubes, and zip-tie the wires so that the entire length of each wire is about 75 feet or less. Attach a zip tie through the holes of the other end of the four two-inch tubes, and stake down the two long, parallel wires with plastic stakes.

DIY, continued

40/80-meter NVIS Antenna

Vertical support

Drive one of the rebar one to two feet into the ground in the middle, between the two long, parallel wires. Drive the other two rebar into the ground about 81 feet apart from each other (40 feet 6 inches from the center rebar.) Cut six three-foot sections of Schedule 80. Drill two opposing 1/4" holes about an inch from each end of three of the six Schedule 80 sections. Slip one of the non-drilled Schedule 80 sections onto each rebar. Slip a 1" PVC coupling onto the top end of each non-drilled Schedule 80 section. Slip the non-drilled end of the drilled Schedule 80 section into each 1" PVC coupling.

Radiator and isolator

Use paracord to guy the top of each drilled Schedule 80 section to two metal stakes. Use paracord to stretch each top 33 feet 6 inch wire to its drilled Schedule 80 section, trying to keep it from drooping as much as possible. Attach the 1-1/4" PVC center section to the center Schedule 80 section. Connect the coax to the SO-239 bulkhead, then tie-wrap the coax along the center Schedule 80 section all the way to the ground. About a foot away from the two long, parallel wires wind ten turns of the same coax around the 4" PVC for an RF isolator, and drill holes in the 4" PVC in the appropriate places for zip ties, then apply zip ties to hold the isolator in place.

Using the antenna

The impedance of your NVIS antenna will not be ideal, due to its proximity to the ground and other factors, so plan on using a tuner with it. Also, the radiating element couples easily with nearby metallic objects at 40 meters, so be sure to keep metal objects at least eight feet away. One last thing to keep in mind: if you're going to use NVIS to communicate effectively with another nearby station on 40 or 80 meters, the other station will also need to use an NVIS antenna, or the QSO might end up being very one-sided.

Good luck!

For Your Insight

Information you could use

Club meeting format

Here's the usual agenda for club meetings, at the Orem City Council Chamber Room, 56 N State St:

Talk-in frequency on the club repeaters

6:30 pm : Eyeball QSO

socialize / put faces with call signs

radio programmers available to help you

6:45 pm : Call the meeting to order

meeting lineup (agenda)

announcements / nets / awards / calendar

7:00 pm : Door prizes

7:15 pm : Discussion / breakout session

discussions usually involve everybody

breakouts split into separate groups

7:50 pm : Dismiss and tear-down

8:00 pm : *Club QSY* to Lucy's Pizzeria

Something you'd like to see at the meetings?

Monthly meeting help

We're grateful for the volunteers who help with various tasks that make our club night just that much more friendly and useful to everybody. Monthly we need help with

programming radios (thanks, Loren / Ralph!)

taking photos or videos during the meeting

operating the talk-in radio

setting up tables and chairs (thanks, Heath!)

Lynx

Websites for your education and leisure

For the New Ham Radio Operator

Ham Radio Nets

DX Summit and DX Maps

76'ers Group and UVARC Group pages

Recommended Study Method (for exams)

Give us your input at uvarcshack@gmail.com

Questions of the Month

Test your knowledge (answers next page)

G3BØ4 : What is a reliable way to determine if the MUF is high enough to support skip propagation between your station and a distant location on frequencies between 14 and 30 MHz?

A. Listen for signals from an international beacon in the frequency range you plan to use

B. Send a series of dots on the band and listen for echoes from your signal

C. Check the strength of TV signals from Western Europe

D. Check the strength of signals in the MF AM broadcast band

E6DØ7 : What is the usable frequency range of inductors that use toroidal cores, assuming a correct selection of core material for the frequency being used?

A. From a few kHz to no more than 30 MHz

B. From less than 20 Hz to approximately 300 MHz

C. From approximately 10 Hz to no more than 3000 kHz

D. From about 100 kHz to at least 1000 GHz

Calendar

What's happening
(times are Mountain Time)

Utah County Ham Exam Sessions

BYU J. Reuben Clark Law School building

Sign up at HamStudy.org/sessions

Wed Jan 17, 7:00 to 8:45 pm
Sat Jan 20, 2:30 to 5:00 pm
Sat Feb 17, 2:30 to 5:00 pm
Wed Feb 21, 7:00 to 8:45 pm
Sat Mar 17, 2:30 to 5:00 pm
Wed Mar 21, 7:00 to 8:45 pm
Wed April 18, 7:00 to 8:45 pm
Sat April 21, 2:30 to 5:00 pm

Provo One-day Technician Courses

Third Saturday Monthly at 8:00 am

2018 Orem Ham Radio Courses

Technician : Jan 23, 30, Feb 6, 13
Extra : Mar 13, 20, 27, Apr 3, 10
Technician : May 22, 29, June 5, 12
General : July 31, Aug 7, 14, 21
Technician : Sept 18, 25, Oct 2, 9

Club Meeting Calendar (6:30 pm)

Orem Council Chambers, 56 N State St

February 1	March 1
April 5	May 3
June 7	July 5*
August 2	September 6

** Actually a potluck at 93 N 400 E*

Regular Nets

RACES Net, Thu Feb 15 8:00 pm, 147.12
Jackson Hole Net, Mon 8:00 pm, 146.76
UVARC Ladies' Net, Tue 7:00 pm, 146.78
UARC 76'ers, Wed 7:00 pm, 146.76
UVARC Youth Net, Thu 6:30 pm, 146.78
UVARC New Ham Net, Thu 7:00 pm, 146.78
CERT Net, 2nd & 4th Thu 8:00 pm, 146.78
Utah County 6 meters, Fri 8:00 pm, 50.14
6-Pack Net, Fri 9:00 pm, 50.15
Family History Net, Sat 8:00 pm, 146.78
UVARC Singles' Net, Sat 9:00 pm, 146.78
See a larger list of nets at noji.com/nets

Upcoming Contests

NAQP (North American QSO Party)
11 am to 11 pm Sun Jan 20

Winter Field Day
noon Sat Jan 27 to noon Sun Jan 28

State QSO Parties (VT, MN, BC)
Sat Feb 3

ARRL International DX SSB Contest
5 pm Mar 2 to 5 pm Mar 4

See a larger list at noji.com/contest

Answers to the Questions of the Month

G3BØ4 : **A** (Listen for signals from an international beacon in the frequency range you plan to use)

E6DØ7 : **B** (From less than 20 Hz to approximately 300 MHz)

Where everybody knows your call sign

Utah Valley Amateur Radio Club
Orem, Utah, USA

K7UVA
Phone/Text: 801-368-1865
Email: k7uva@arrl.net

Repeaters: 146.780-, 100.0
448.200-, 100.0 224.560-, 100.0

Newsletter input?
Email uvarcshack@gmail.com
Need help?
Email uvarcelmer@gmail.com

We're on the web!
uvarc.club

We are the *Utah Valley Amateur Radio Club*, a 501(c)(3) non-profit (EIN 81-360-6416) Utah corporation that was organized in an obscure Orem fire station on 02-05-2016 to provide amateur radio hobbyists in Utah County and surrounding areas a way to gather and discuss all things ham. Our primary purposes are to provide a local amateur radio resource, help new hams in their new-found adventures, and to give more experienced hams a reason to share their wealth of knowledge and wisdom in a friendly atmosphere of fellowship. We're an ARRL Affiliate and work in cooperation with the Utah VHF Society, but are not subsidiary to them, to UARC, the 76'ers, UCARES, RACES, the SCATeam, or any other organization, although many of our members might also belong to the same.

This alleged newsletter is published every so often by the Utah Valley Amateur Radio Club, and its purpose is to convey the tone and temperament of the club, to inform and entertain its members, and to entice the rest. To join, go to www.facebook.com/groups/uvarc/ and request membership. For more information about our club or about amateur (ham) radio in general, please email or text or call us.

More than just a club, we invite you to become part of a great ham radio movement in Utah Valley.

Our fearless leadership

Presidency

President..... Noji Ratzlaff
Vice President..... Chad Buttars
Secretary.....Caryn Alarcon
Activities..... Jeff McGrath
Technology.....Trevor Holyoak

Board of Directors

Richard Bateman, KD7BBC
Carl Pockrus, WE7OMG
Aubrey Gum, K7GUM
Jody Dollar, K7BUX
Jeremy Giovannoni, K7TEH
Brad Kirk, AF7FP
Alma Perry, W1ZGY

Club Sponsor

Heath Stevenson
Orem City Emergency Manager

73